

On some Rostro-carinate Flint Implements and Allied Forms.

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The specific type of flint implement which was discovered by Mr. Reid Moir, of Ipswich, in 1909, and described by me* as the "rostro-carinate" type, has been found and recognised by various observers since that date. The importance of these implements arises from two facts. The first is that they exhibit a design, or "sculptural form," distinct from that of the previously known palæolithic flint implements. They do not belong to the platessiform tongue-shaped Chellean and Acheuillian types, nor to the amygdaloid somewhat smaller type of the same age. They cannot be grouped with the Moustierian pointed flakes and the numerous scrapers, knives and borers of various Palæolithic ages; nor can they be referred to any recognised Neolithic type of implement.

The second fact is that several specimens of this novel type—the rostro-carinate—have been found in the detritus-bed (bone-bed) of Suffolk, underlying the Red Crag, and in the remarkable "stone-bed" or "flint-bed" underlying the Norwich Crag in Norfolk. In those deposits flint implements of the large types familiar in the terrace gravels of our river valleys are unknown.

Many "rostro-carinates" of well-defined character have, since my original description of the type, been found, some in deposits of later date than the sub-Crag detritus-bed of Suffolk and the sub-Crag stone-bed of the Norwich area, others actually in the detritus-bed and stone-bed. Mr. Reid Moir has obtained typical specimens from the Middle Glacial Gravel and from the Chalky Boulder Clay near Ipswich. Prof. Marr has found one in a gravel of the Chellean age† near Cambridge. Several have been found in a remarkable deposit, described as "a raised beach," at the Island MacGee, near Larne (Belfast), of which I have figured the most remarkable specimen in my memoir on the Norwich test specimen.‡ Mr. Reid Moir has also recently published an account§ of a noteworthy series of specimens from river-

* 'Phil. Trans.,' B, vol. 202, pp. 283-336 (1912).

† Prof. Marr obtained this implement at the Traveller's Rest Pit, Huntingdon Road, Cambridge. He writes that "the gravel there contains only worn Chellean and Acheulean implements below, and either latest Acheulean or earliest Le Moustier (or both) above. The latest things are not much worn." None of it is pre-Chellean, but this does not exclude the possibility of the inclusion of a few pre-Chellean derivatives.

‡ 'Occasional Papers,' No. 4, Royal Anthropological Institute, 1914, text-figs. 9-14.

§ 'Phil. Trans.,' B, vol. 209 (pub. 1920, received 1917).

terrace gravels, which exhibit transition, in form and sculptural treatment, between the typical "rostro-carinate" and the large platessiform tongue-like implements of Chellean age.

It is impossible to assign any of these later "rostro-carinate" specimens to the

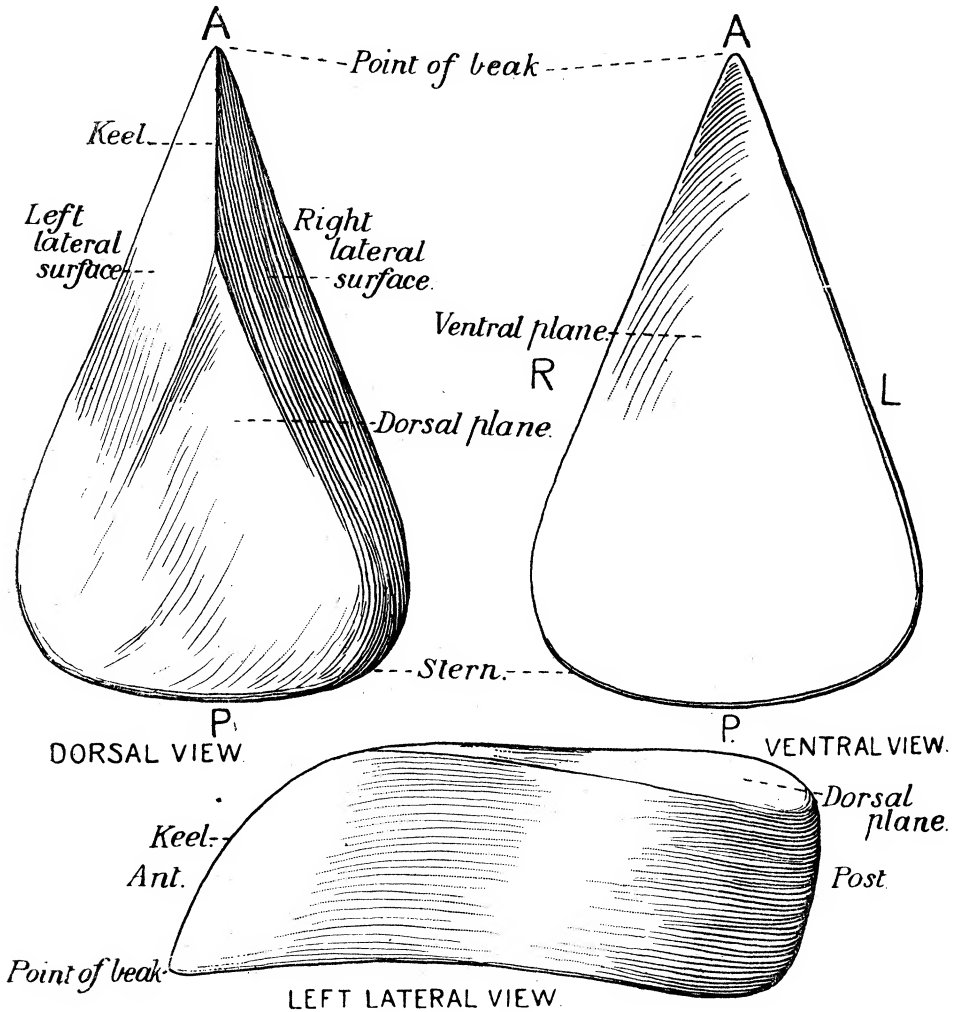


FIG. 1 (From the 'Phil. Trans.,' B, May, 1912).—Diagrams showing the ideal form aimed at by the makers of the rostro-carinate flint implements or "Eagles' Beaks." A, anterior; P, posterior; R, right; L, left. (In the present memoir I use the term "carina" in place of "keel," and sometimes refer to the "dorsal plane" as the "dorsal platform.")

geological horizon or deposit corresponding to the date or period at which they were fabricated by man. Some have been found in such positions and such beds that it is possible that they were manufactured at the same date or period as were those found beneath the Red Crag and the Norwich Crag.

They *may* have remained undisturbed on the land surface, or embedded superficially, for long ages after that period, and may have been swept up by the waters which deposited a series of later gravels. Some of them exhibit such evidence of water-wearing, since they were flaked into shape, as to *suggest* a more ancient origin and history than that of palæoliths of recognised types found in gravels of the age in which these specimens occur. But this is not, by any means, invariably the case. It is true of Prof. Marr's Cambridge specimen (and of others obtained by Mr. Reid Moir at Mundesley, not yet published), but it is not the case of others which, nevertheless, have been taken from gravels deposited at a period long subsequent to the sub-Crag detritus and stone-bed. The rostro-carinate implement from the raised beach at Island MacGee, figured by me in the Royal Anthropol. Inst. 'Occasional Papers,' No. 4, is a case in point. It has suffered very little from water wear or attrition. Remarkable in this respect is the specimen here figured (figs. 2 to 5) from Icklingham, the fracture edges of which are very clean and sharp, though not to the same degree as those of a newly fractured flint. Less fresh in appearance, and strongly iron-stained and polished, but still not much "rubbed down," are the rostro-carinates figured in this paper from the Oise (figs. 6, 8, 10, 12), from Burnham Beeches (figs. 7, 9, 11), and from Sonning (figs. 13 and 14).

Nomenclature of Rostro-carinates.

It is often convenient to refer by means of *names* to the more remarkable specimens of rostro-carinate flints which have been described and carefully illustrated in published memoirs. Thus we have the "Evans-Lackenheath specimen,"* the "Moir-Foxhall pebble,"† the Moir-Whitton‡ Uncinate,"§ the "Moir-Whitton sub-Crag massive"|| being a few from among those figured and described in my memoir in 1911. Then we have the "Clarke-Norwich test. specimen"¶ and the "Lankester-MacGee specimen,"** so named to distinguish it among the large series collected by Mr. W. G. Knowles, of Ballymena. The list could be advantageously extended by giving like names to the more important mid-glacial and Boulder Clay specimens figured by Mr. Moir, whilst the transitional series figured and described by him†† are

* 'Phil. Trans.,' B, No. 290, figs. 4 and 5.

† 'Phil. Trans.,' B, No. 290, figs. 2 and 3.

‡ Whitton is the name of the parish in which the large "brick-pit" of Messrs. Bolton and Laughlin is situated on the border of the town of Ipswich.

§ 'Phil. Trans.,' B, No. 290, figs. 6 and 7.

|| 'Phil. Trans.,' figs. 18 and 19, and Plate 17.

¶ 'Occasional Papers,' No. 4, Royal Anthropological Institute, Plates 1, 2, and 3.

** Text-figs. 9-14 in the same memoir.

†† 'Phil. Trans.,' B, No. 367 (1920).

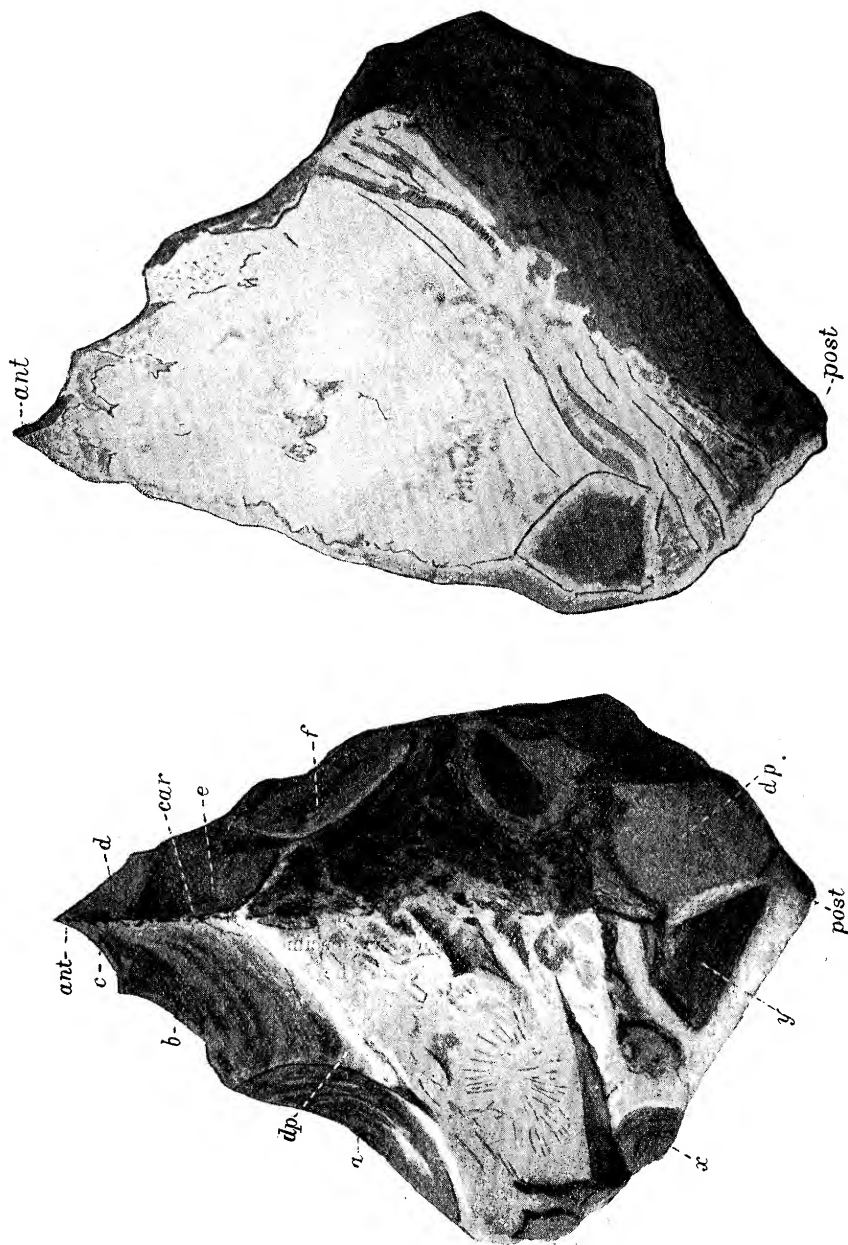


FIG. 3.

FIG. 2.

Figs. 2 and 3.—Dorsal and ventral aspect of the Sturge-Icklingham rostro-carinate (drawn of the actual size). *Ant.*, anterior point; *post.*, posterior region; *car.*, carina; *d.p.*, the dorsal plane; *y*, site whence a “trimming” has been removed; *x*, a similar site; *a*, *b*, *c*, the concavities left by the removal of the three chief “flakings” of the left lateral region of the rostrum; *d*, *e*, *f*, the concavities left by the three chief “flakings” of the right side. Note the unworn condition of the carina and the unsymmetrical shaping of the mass or butt of the flint behind the rostrum.

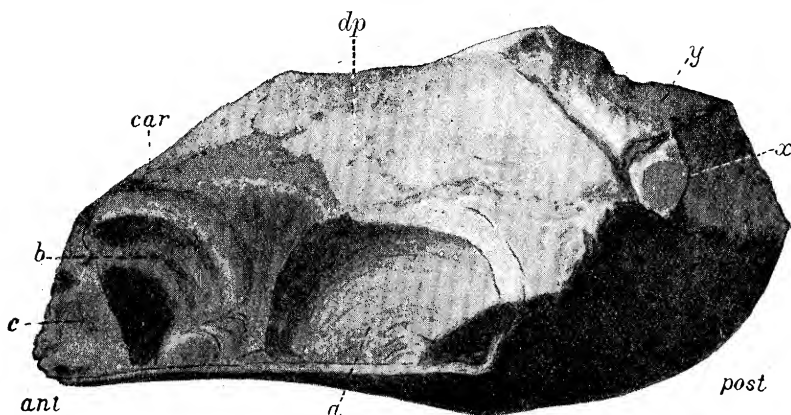


FIG. 4.

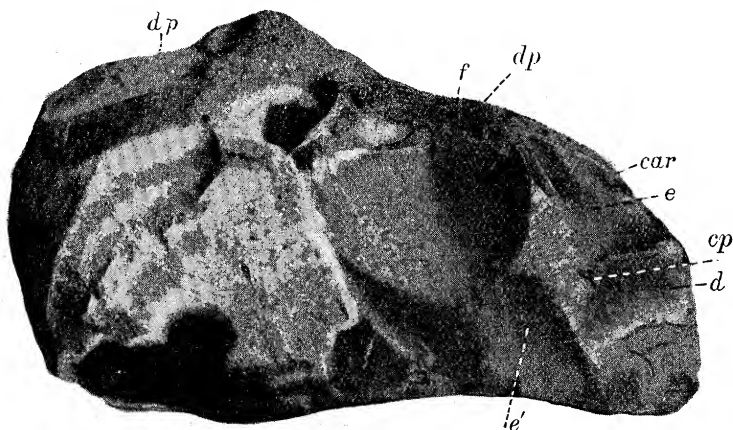


FIG. 5.

FIGS. 4 and 5.—Left lateral aspect and right lateral aspect of the Sturge-Icklingham rostro-carinate. The close similarity of the outline to that of the similar lateral view (whether right or left) of the "Norwich test specimen" should be verified by comparing these two figures with the figures of the Norwich specimen on the opposite page. The lettering here is the same as in figs. 3 and 4, except *cp* in fig. 5, which points to the "centre of percussion" of the blow by which the flaked surface *e e'* was formed. The formation of the concave flaked surface *f*, fig. 5, by a blow downward from the dorsal plane, is well shown by its rippling.

Fig. 4 is from a wash-drawing; fig. 5 is a reproduction of a photograph of the actual specimen.

readily distinguishable as the "Kendall-Savernake" transitionals I and II, the "Allen-Brown-Dawley" transitional, the "Smith-Warren-Hill," the "Greenhill-Clapton," the "Moir-Ipswich," and the "Barnes-Axminster" transitionals.

Those specimens of rostro-carinate which are here figured for the first

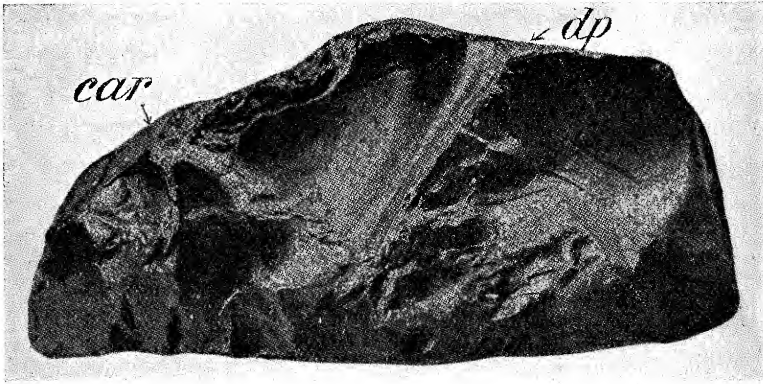


FIG. 4 *bis*.

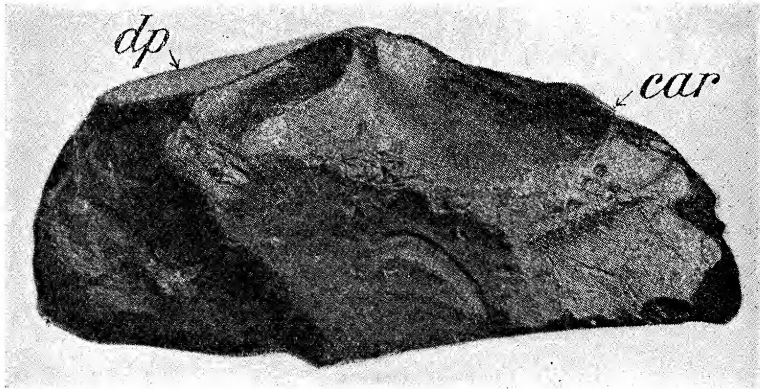


FIG. 5 *bis*.

FIGS. 4 *bis* and 5 *bis*.—Right and left lateral aspect of the Norwich test specimen (published by me in the ‘Occasional Papers,’ No. 4 (1914), “Roy. Anthropol. Institute”), to compare with the similar views of the Sturge-Icklingham specimen.

time I propose to name as follows :—The Sturge-Icklingham rostro-carinate the Capitan-Oise and the Rowell-Burnham uncينات; the Peake-Sonning uncinat; and the Moir-Martlesham jack-plane.

Section I.—*The Sturge-Icklingham Rostro-carinate.*

This implement was picked up in a field at Icklingham, Suffolk, and given to Mr. Moir by Dr. Allen Sturge. It is now in the Ethnological Department, British Museum, Bloomsbury. The edges of its fractures are not absolutely fresh and sharp, but are very little blunted. It is not iron-stained; its unfractured surface is white, its fractured areas are black and translucent at the edges. It is in a mineral condition similar to that of

hundreds of other flints found in that district.* Four views are given in figs. 2, 3, 4, and 5 of the actual size of the specimen. I also reproduce in fig. 1 the diagram of the ideal rostro-carinate published by me.†

In general sculpture the Icklingham specimen conforms very closely to the ideal diagram, but is not trimmed to a symmetrical oval shape posteriorly. As seen from above (what I conventionally call "the dorsal aspect"), the mass on the left side of the "carina" and middle line is seen to be the larger and to project asymmetrically as compared with the right side. The maker of the implement attached no importance to this defect in symmetry, and did not risk any further trimming of the piece to bring it into a more regular shape.

This implement has obviously been fashioned from a piece of flint broken in the first place to a tabular form with ventral plane surface and dorsal plane surface. The dorsal surface consists in part of the original cortex of the flint nodule. It is of the usual opaque white finely granular texture. The whole of the ventral surface and of the posterior more or less vertical surface (*d.p.*, fig. 2) has been produced by ancient fracture (preceding the flaking which has formed the sides and the carina of the implement), and is white ("decomposed" or "*re-composed*" flint), but this white layer does not extend so deeply into the black flint as does the more primitive white area of cortex. It is a mere skin of $1/40$ of an inch thick, whereas the primitive cortex is $1/10$ to $1/5$ of an inch thick. The latter has a pale brownish tint as compared with the former, which is of a purer white. The original cortex is finely granular in texture, whereas the later white skin is smooth and enamel-like, and tends to flake off in thin superficial laminae (as often seen in "weathered" flints).

The man who fashioned the flint to its present rostro-carinate shape obtained it as an irregular block of superficially whitened or decomposed flint, about an inch and a half to 2 inches thick, with a flat upper and lower surface, having an area of some 4 inches by 3 inches. He struck off very few, yet dexterously taken, flakes which exposed the black unchanged flint (fig. 2 *a, b, c* left, and *d, e, f* right). Thus were shaped the two sides of the implement, converging to a median point or rostrum (fig. 2, *ant.*) and separated by a sharp-edged "carina," like the keel of a boat's bow (p. 331 and figs. 3 and 4, *car.*). The three principal flakes on the left lateral face, lettered *a, b, c* in

* Mr. Moir writes: "This rostro may be late Palæolithic or even Neolithic; on the other hand, the Icklingham fields are strewn with undoubted glacial material, and this particular flint may have been derived from some pre-existing glacial deposit." In the present state of knowledge it seems impossible to give a definite opinion as to its age.

† 'Phil. Trans.,' B, No. 290.

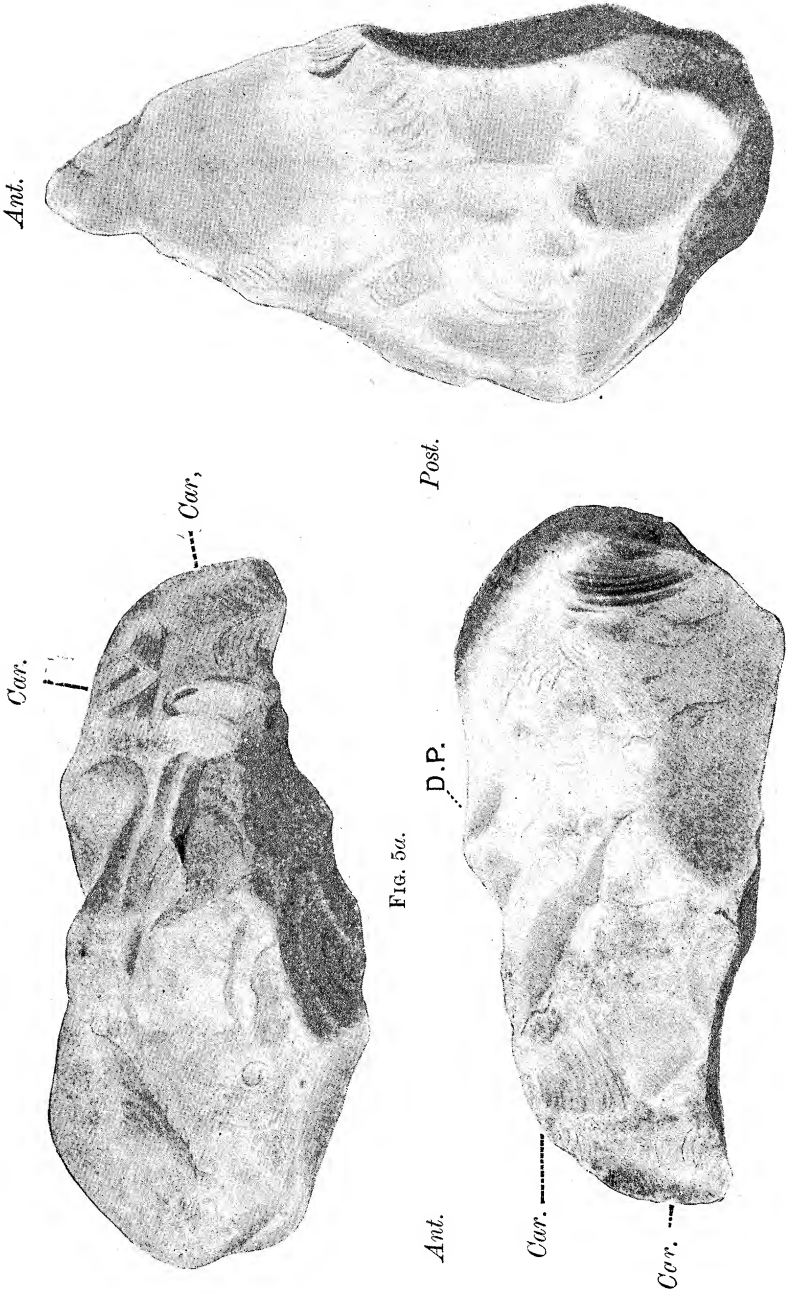
fig. 2 and fig. 4, have all been struck from the ventral plane upwards. The most anterior is much smaller than the other two, but the fracture-ripple-marks in each case demonstrate the site and direction of the blow which produced them. On the right side a large flake has been removed from the surface marked *f*, the ripples on which show that the blow was delivered downwards from the edge of the dorsal platform above it; *d* marks a smaller area cleared by an upward blow, probably after the area marked *e*, which extends round *d* to the edge of the ventral plane, had been formed. The area, of which the upper half is marked *e*, was formed by a blow, shown by the ripple marks to have been applied vertically to the surface near the point where in fig. 5 (which is a photograph) a >-shaped mark is obvious. A small centre of percussion *c.p.* is visible in the specimen just below this mark. Some five small black areas (some unlettered, but two marked *x* and *y*, in figs. 2 and 4) scattered on the otherwise white hinder region of the implement, show where "trimming" fractures were administered; they have no influence on the important part of the implement—the rostral area—which, with its deftly shaped black sides and sharp clean-cut carina, has been struck into the desired form by three flakings on each side of the mid-line, only one of which was struck downwards from the dorsal plane or platform.

In most rostro-carinate implements, the flat ventral surface itself, its sharp lateral edges where the flaked sides cut it, and the acute point in which it terminates anteriorly, are what appear to have been *useful* features—the first for flattening and smoothing; the second for cutting, planing, and scraping; the third for pushing and boring wedge-wise into tough material. Usually the carina (see diagram, fig. 1, and *car.* in figs. 2, 4, and 5) is so much blunted and splintered as to be apparently of no value as a "cutting edge." This bluntness may, however, as Mr. Reid Moir thinks, be due to the "wear and use" of the implement, and the carina or keel may usually have been, when the implement was newly produced, a valuable cutting edge. In any case this is certainly true of the Sturge Icklingham specimen here figured, which has the best preserved edge to its carina of any rostro-carinate known to me.

Section II.—*The Moir-Whitton Yellow Mid-glacial No. II.*

This (figs. 5*a*, 5*b*, and 5*c*) is an interesting and valuable specimen, because it is a thoroughly typical rostro-carinate with dorsal plane (fig. 5*b* D.P.), well marked ventral plane occupying the whole ventral area (fig. 5*c*), good carina (*car.*) and distinctly *uncinate* rostrum, projecting somewhat below the ventral plane.

The specimen is of a uniform yellowish-brown colour, glistening, that is



Figs. 5a, 5b, and 5c.—Drawings of the "Moir-Whitton yellow mid-glacial" rostro-carinate, now in the Ipswich Museum. It was figured by Mr. Reid Moir in 'Journ. Roy. Anthropol. Institute,' vol. 46, p. 204. Fig. 5a.—View of right lateral region. Fig. 5b.—View of left lateral region. Fig. 5c.—View of the ventral plane. Letters: *Ant.*, anterior; *Post.*, posterior; *Car.*, carina; *D.P.*, dorsal plane or platform. Drawn of the actual size.

to say, slightly sand-polished. It was obtained by Mr. Moir from Bolton and Laughlin's great pit at Whitton, Ipswich. It is less sharp in its edges and more "polished" than is the Sturge Icklingham specimen just described. It has also special importance as coming from the Mid-Glacial Gravel. Other implements have been described by Mr. Moir from this locally well-developed gravel, as well as the present specimen.

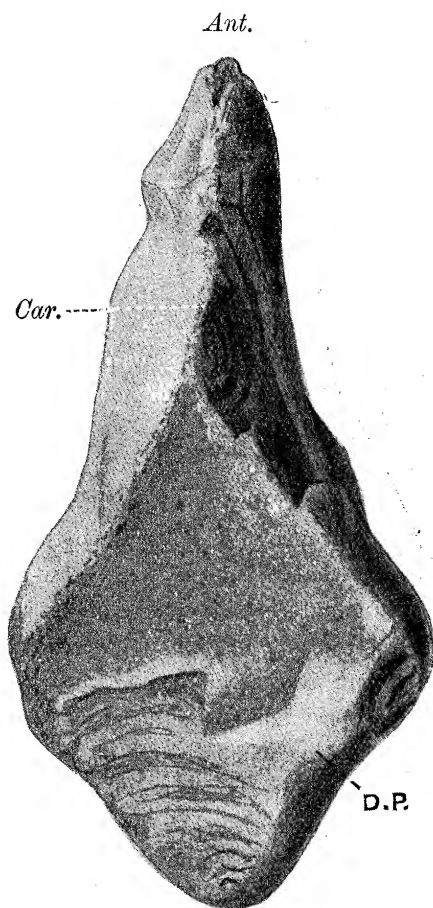
Section III.—*The "Capitan-Oise" and the "Rowell-Burnham"*
Uncinates.

The remarkable coincidence in the sculpture of these two implements renders it desirable to describe them together. The Capitan-Oise specimen (figs. 6, 8, 10, and 12) was sent to me by Prof. Capitan, of Paris, in 1915, as being, in his opinion, an implement of the rostro-carinate type. He writes: "Il provient des graviers du fond de la vallée de l'Oise, sans provenance précise, mais certainement de la basse vallée. Ces graviers débutent (comme faune et industrie) au Chelléen et vont jusqu'au Moustérien."

When this specimen reached me, I was already in possession of that found in the gravel at Burnham Beeches (Thames valley) by Dr. Rowell, and the close similarity of the two specimens was at once obvious. In both, the anterior region or "rostrum" has a somewhat "hooked" or claw-like appearance, which may be described as "uncinate." This shape of rostrum was already known to me in some other rostro-carinates, for instance, in the "Moir Ipswich uncinata," drawn in figs. 6 and 7 of my memoir.* Further, both the Oise and the Burnham Beeches specimens present none of the original cortex, but are flaked all over, excepting a small area of the Oise specimen, shown in fig. 8, in deep shadow below the line *llv.* (which I identify as corresponding to the left latero-ventral margin of the ideal type, fig. 1), and they are iron-stained all over—the Oise specimen more deeply than the other.

But the two most important features shown by the Oise and Burnham Beeches specimens are, *first*, the very large and flat dorsal platform or plane, marked D.P. in the figures, showing in each case the curved ridge-like ripple marks produced by the single blow by which it was formed, and *second*, the apparent absence of anything like the great "ventral plane" of the ideal type, which in most rostro-carinates is a very obvious and important feature of their architecture. In both specimens a keel-like ridge (*rlv.* in the figures) forms the ventral boundary of the rostral region of the implement, though the posterior half is broad and butt-like. We

* 'Phil. Trans.,' B, No. 290.



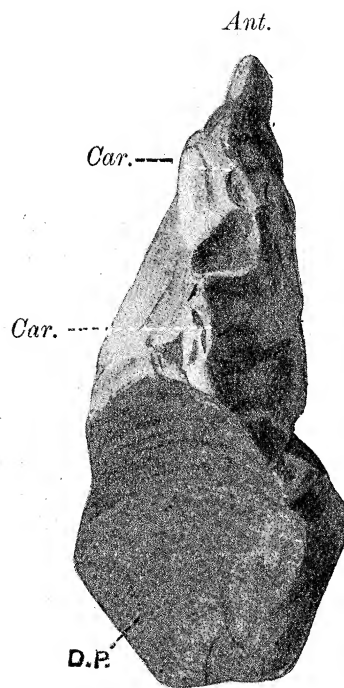
OISE.

Post.

FIG. 6.

The "Capitan-Oise" and "Rowell-Burnham" uncinates.

FIG. 6.—Dorsal aspect of the Capitan-Oise specimen.



BURNHAM.

Post.

FIG. 7.

FIG. 7.—Similar view of the Rowell-Burnham specimen.

have in this case a disappearance or "transference" of the ventral plane, similar to that described by Mr. Moir in some of his transitional specimens.*

Mr. Moir supposes that, in his transitional series, the ventral plane of a possible rostro-carinate has been chipped away by flaking from *both* sides, so as to convert it into a cutting ridge, forming one side of the completed platessiform implement.

That may be so in some instances. We must not expect that the successive steps in human workmanship, aiming at the realisation of a desired form—as, for instance, in the supersession of the rostro-carinate by the platessiform type—will be invariably the same as though they were controlled by a morphological inherent quality. Primitive man succeeded in producing a useful flattened leaf-shaped implement, in some cases, by symmetrical trimming down of the dorso-lateral mass of a possible rostro-carinate, leaving the ventral plane intact. This Mr. Moir has recognised, and applied to it the name suggested by me, viz., "batiform." Further, it appears to me that the early flint-workers, when not desiring to combine the "planing" and flattening quality of the typical rostro-carinate with those of its point and carina, often got rid of the "ventral plane," *not* by first making it and then chipping it away on both sides, but by so chipping the flint, from the first, as to *dislocate* or "transpose" the "ventral plane," and throw it up, as it were, to form part of either the right or the left lateral areas.

This, it appears to me, is what has been done in the two uncinatc rostro-carinates from the Oise and from Burnham Beeches. What would have been developed as a flat ventral plane parallel to the dorsal plane in the making of a typical rostro-carinate is, in both of these specimens, given an upward tilt and allowed to "run into" (or one may say is "flaked into") the left lateral region. Probably there was no attempt from the first handling of the flint at the production of a ventral plane. After all, this is, perhaps, a mere question of descriptive terms. I doubt whether it is possible to interpret the operation of man's ingenuity in manufacture—even that of Palæolithic man—by laws suggested by the morphology of living organisms. The main point is that we have evidence of what blows were struck, and what shapes were thereby produced—and we employ comparisons with organic shapes to describe, but not to explain, them.

If we had any real knowledge of the mechanical needs and urgent requirements of primitive man, as well as of the habits and opportunities of those whose work we discover, we might, instead of vague suppositions, offer plausible suggestions as to the value to him of the shapes of those implements of his which we dig up. I am strongly of opinion that the very large

* 'Phil. Trans.,' B, 1920.

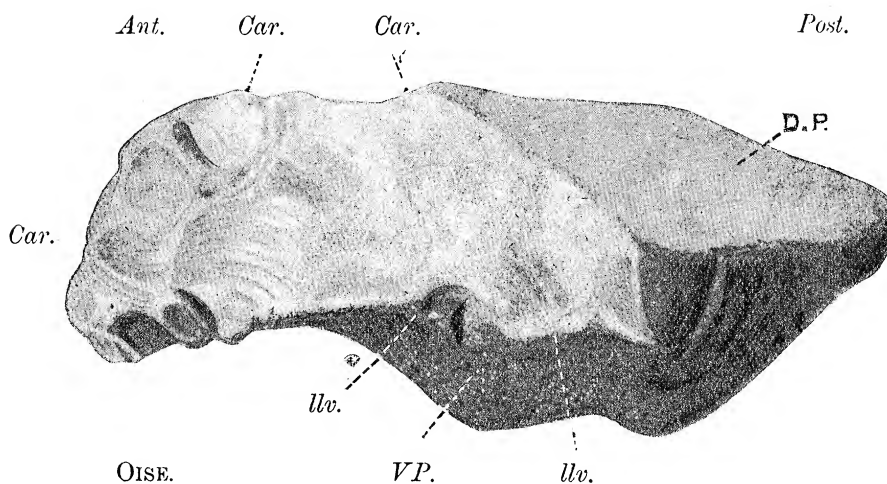


FIG. 8.

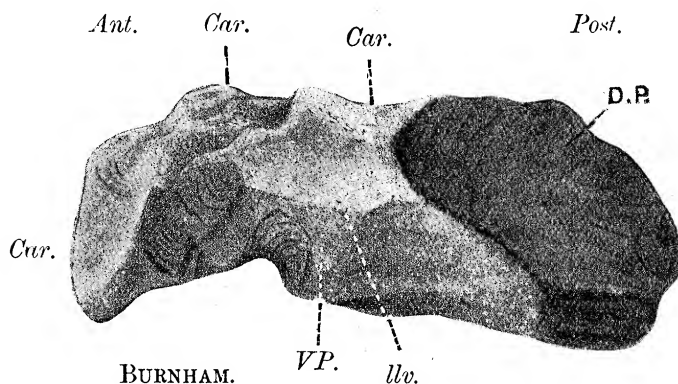


FIG. 9.

The "Capitan-Oise" and "Rowell-Burnham" Uncinates.

FIG. 8.—Left lateral aspect of the Capitan-Oise specimen.

FIG. 9.—Similar view of the Rowell-Burnham specimen. Lettering: *Ant.*, anterior; *Post.*, posterior; *D.P.*, dorsal plane or platform; *Car.*, carina; *llv.*, LEFT latero-ventral *arrête* or ridge separating the left lateral surface from the reduced and up-turned ventral plane; *VP.*, the obliquely up-thrown ventral plane (see fig. 12).

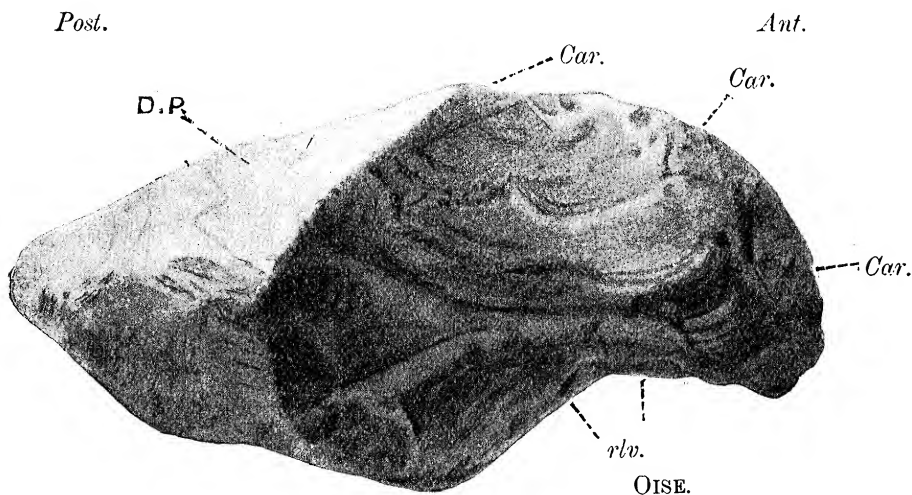


FIG. 10.

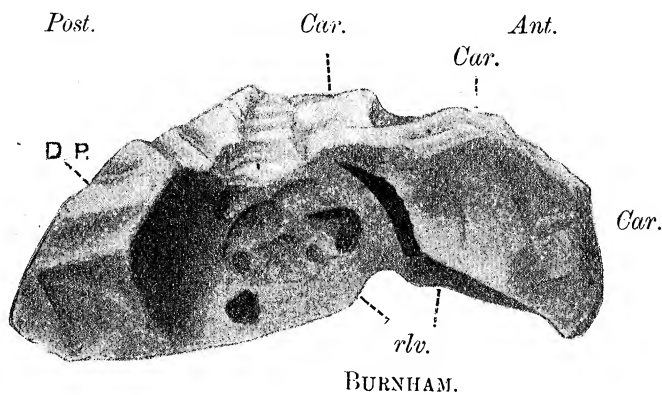


FIG. 11.

The "Capitan-Oise" and "Rowell-Burnham" Uncinates.

FIG. 10.—Right lateral aspect of the Capitan-Oise specimen.

FIG. 11.—Similar view of the Rowell-Burnham specimen. Lettering as in Figs. 6-9, excepting *rlv.*, the RIGHT latero-ventral *arête* or ridge separating the right lateral surface from the reduced and up-turned ventral plane (see fig. 8).

dorsal plane or platform, D.P. in the Oise and Burnham specimens, must have served a special purpose. I suggest that it would facilitate the binding of the implement to a short wooden "hefting piece" which (as we see in Neolithic

and modern Melanesian examples) was inserted at right angles into a stout handle. Of course, in place of a hefting piece, the ancient men may have employed a naturally bifurcate vegetable stem, as do some of the Melanesians of the present day.

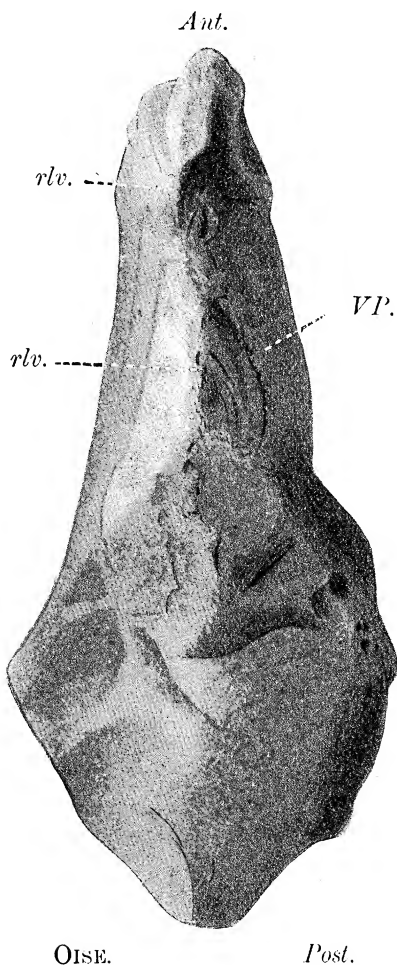


FIG. 12.—Anti-dorsal aspect of the Capitan-Oise specimen, showing the median position taken by the right latero-ventral *arrête* or ridge, *rv.*, and the upthrow of the ventral plane, *VP.*, to the left lateral face in the rostral region, whilst the broad "butt" or "stern" is treated merely as a massive base to the large dorsal plane.

Section IV.—*The Peake-Sonning Uncinate.*

The specimen drawn in figs. 13 and 14 was obtained in the gravel at Sonning (on Thames) by Dr. A. E. Peake, of Burford, and has been kindly lent by him to me for description. It is a large example of a form which may be considered as a derivative of the last two described, in which not only the "ventral plane," but also the dorsal platform or plane has been abandoned as an element in the modelling of the completed implement. It is simply a "rostro-carinate," reduced to a more or less "uncinate" rostrum, and a simple flaked "body" suitable for the hand-grip. Smaller flints, having the same general shape, are known, but the evidence of human workmanship in this larger specimen is more convincing than in others which probably are to be interpreted also as human productions. The series of parallel flakings on the left face of the Sonning specimen (fig. 13) are clearly of human origin. A large area of

original cortex (*x* and *y* in figs. 13 and 14) is retained and forms a sort of collar, marking off the "rostrum" from the rest of the flint. In the explanation of figs. 13 and 14 I have suggested the possible identification of certain

FIGS. 13 AND 14.—Left (fig. 13) and right (fig. 14) face of "the Peake-Sonning uncinete," drawn of the actual size. Letterings x and y point to a large area of unflaked cortex, the natural shape of which as a sort of trough has been used by the tool-maker to emphasise the overhanging rostrum (see x, y in fig. 14); xp , flaked edge of cortex; car , carina; car^* , identical point in figs. 13 and 14; dp , possible remnant of a dorsal plane; vp , probable representative of the ventral plane, now merged in the right lateral area; n , probable right latero-ventral *arête*; car , carina; h , large flake-area on left side of rostrum; xc and z , identical points shown in the two drawings; h , a natural hollow in the flint, due to enclosure of organic remains (probably a sponge).

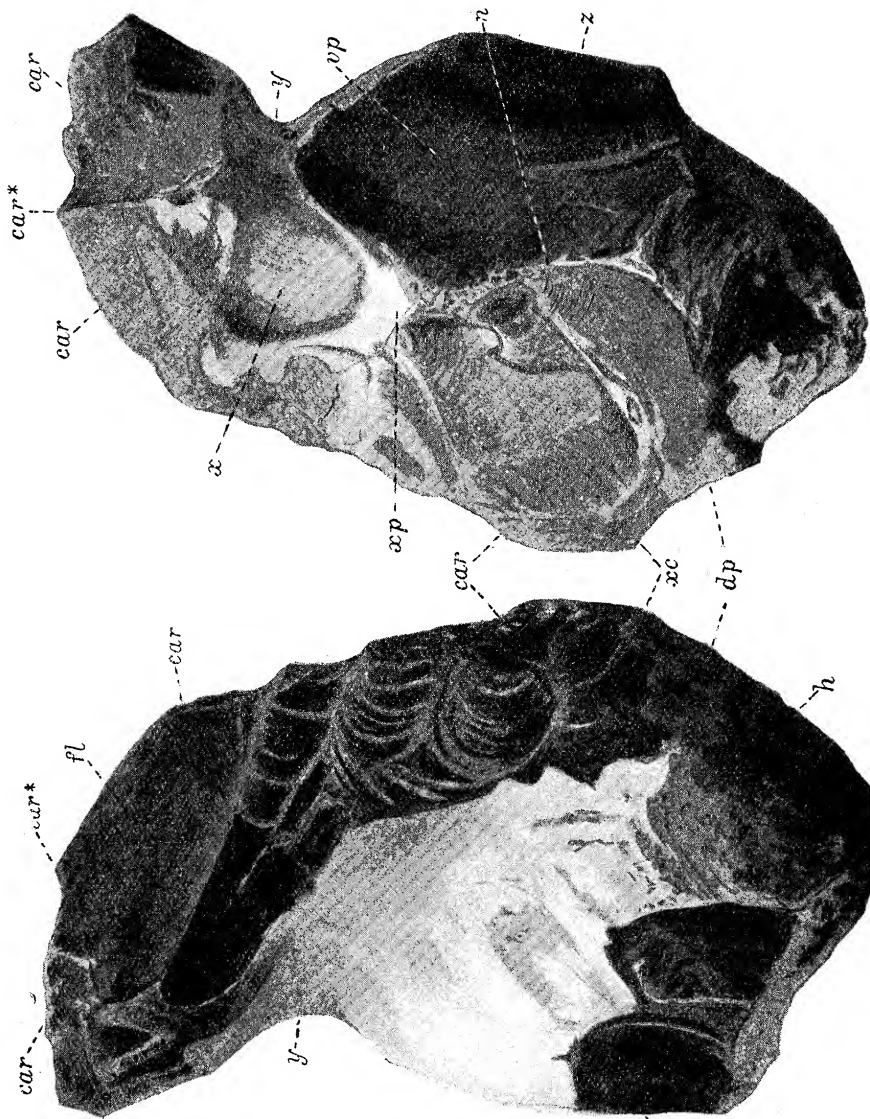


FIG. 14.

FIG. 13.

areas of the sculptured surface as the transposed and modified representative of the ventral plane and the dorsal plane of a fully developed rostro-carinate.

Dr. Peake informs me that the bed from which this and other similar flints come is mapped as "plateau-gravel" (Sonning Common, Oxon). It is made up of sand and gravel, about 10 feet thick, resting on the chalk. Here it is 250 feet above sea-level. Palæolithic implements were found by Dr. Peake on the surface in the neighbourhood, but none were obtained by him *in* this particular bed of gravel.

Section V.—*The Moir-Martlesham Jack-plane.*

In the Oise and Burnham specimens we have seen the rostro-carinate ideal type modified by the removal of the ventral plane to a lateral position, yet still recognisable. In the Sonning uncinatæ not only has the area, which seems to correspond to what was "the ventral plane," moved to an entirely lateral position, but the *dorsal* plane is not certainly recognisable. The rostrum—beak-like, uncinatæ, and dominant—is the leading feature of utility and permanence in those specimens.

I now have to draw attention to a specimen obtained by Mr. Moir from the sub-Crag detritus bed at Martlesham, near Woodbridge, Suffolk,* which is of considerable importance, *first* because of the unchallenged evidence of purposive and skilful human flaking which it presents; *second*, because of its undoubted *provenance* from the sub-Crag bed; and, *third*, because it presents only one of the *useful* features of the rostro-carinate type. It is *not* rostrate and it is *not* carinate, but it has a wonderful smooth, flat, ventral plane, $5\frac{1}{2}$ inches long by $3\frac{1}{4}$ inches broad; the mass of flint surmounting this plane surface has been flaked into the shape of a pair of domes or prominences, the hinder of which gives an ideal grip for the right hand when the implement is used as a "jack-plane." One margin of the plane retains even to this day a fine cutting edge—and I therefore consider this as the anterior border—that which was moved forward when the implement was used—as I little doubt that it was—for shaving down wood. The whole "balance" of the heavy implement suits it perfectly for use in this way.

The two "domes" are separated by a natural valley clothed with original cortex. It is marked *cort.*¹ and *cort.*² in figs. 16 and 17. Another patch of cortex, *cort.*³, is seen in fig. 16. A whitish calcareous incrustation covers the steep, almost vertical, surface of fracture (*vert.*, fig. 16) which rises from the

* It was found by Mr. Moir's workman, Baxter, resting upon the London clay beneath shelly Red Crag in a pit in the nursery garden of Mr. R. C. Notcutt at Martlesham, in the year 1912.



FIG. 15.—Ventral aspect of the “Martlesham Jack-plane.” Drawn of the actual size. *Ant.*, anterior margin (apparently that which was used as a cutting edge when the implement was pushed forward in the manner of a carpenter’s plane); *Post.*, posterior margin. The formation of this ventral plane by one large fracture, from the edges of which a few relatively small “trimming” flakes have been removed, is evident.

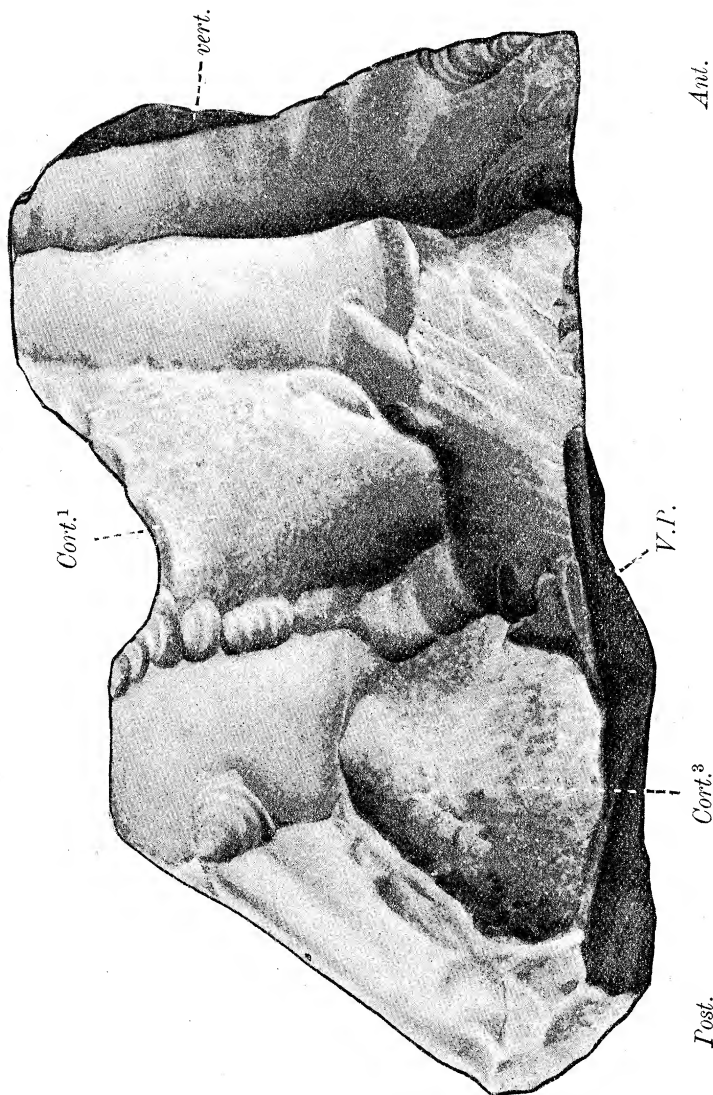


FIG. 16.—Right lateral face of the Martlesham Jack-plane.

Lettering in both figs. 16 and 17: *Post.*, posterior; *Ant. H.*, anterior hump; *Post. H.*, posterior hump; *V.P.*, ventral plane (shown by slight tilting of the specimen); *cort.¹* and *cort.²*, unflaked cortex in the valley separating the two humps; *cort.³*, unflaked cortex on the right lateral area; *vert.*, vertical anterior face formed by a vertical fracture. The numerous large flakings by which the implement was sculptured and the ripple-marks showing their centres of percussion and direction are obvious.

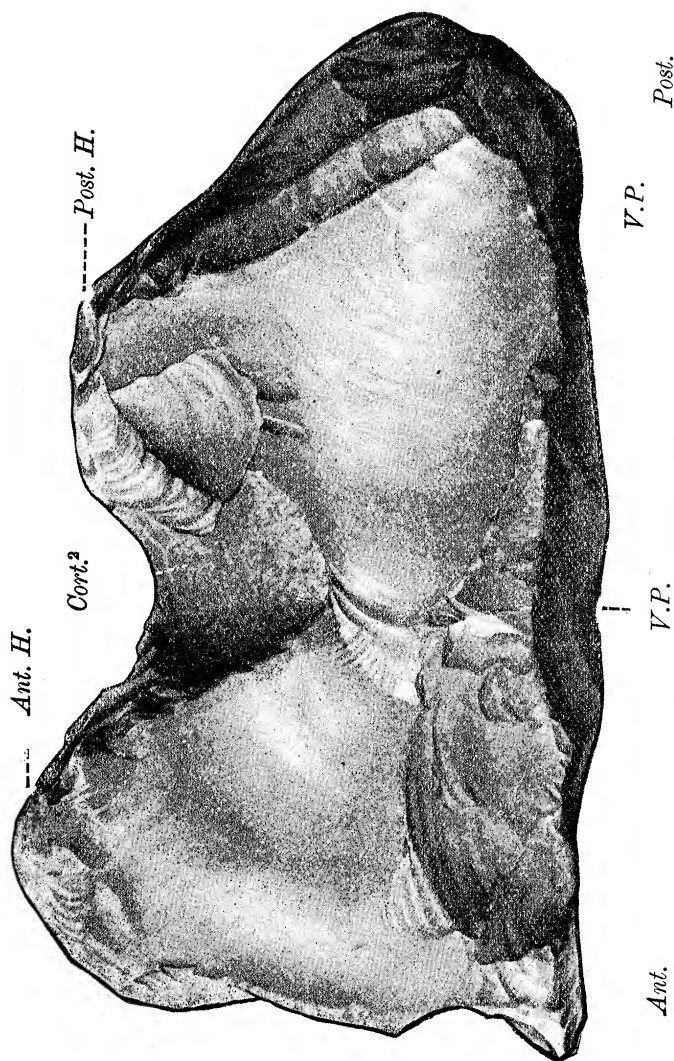


FIG. 17.—Left lateral face of the Martlesham Jack-plane. Letters as in fig. 16. The cutting of the reference lines to *V.P.*, *Ant. H.*, and *Post. H.*, has unfortunately broken the outline of the drawing in figs. 16 and 17, as also have the reference lines to *car.* in figs. 10 and 11.

anterior cutting edge of the ventral plane. This fracture probably existed before this lump of flint had fallen into the hands of a human artificer. The rest of the surface presents a beautiful combination of milky greys and browns (due to iron-stain and decomposition*) and in some parts a brilliant polish (not rightly called "glaze"). Very numerous shallow and broad scratches cross one another on the flat surfaces of the flint. I am unable to decide whether they should be attributed to glacial agency or to less forcible sand scratching, which could, no doubt, cause markings on flint which had been exposed to the softening effect of atmospheric weathering.

Some day we may hope to see a careful and really adequate study of the scratching, polishing, staining, and other markings of flints from different deposits and of different antecedents, also a study of the fracture of flint by heat, by cold, by natural blows, by humanly directed blows—a very large subject, including hinge-fracture and an endless variety of "rippling"—but not admitting the possibility of the fracture of flint by the weight of super-incumbent water or sand.

All the specimens figured in this paper, with the exception of Mr. Moir's "Whitton-Mid-Glacial typical form" (figs. 5*a*, 5*b*, 5*c*) and Dr. Peake's Sonning uncinata (figs. 13 and 14), are now presented to the British Museum Department of Ethnology and Mediæval Antiquities, where they can be examined alongside of the rostro-carinates previously described by me, and kindly presented by their owners to the national museum, chief among whom is Mr. Reid Moir, of Ipswich.

Theoretical Suggestion.

In conclusion I wish to point out that although it is not possible in the present state of our knowledge to gain direct evidence of the *historical* relationship and derivation, one from another, of the early forms of flint implements—there is yet sufficient ground for holding it to be probable that the conception of a "form" or "type" to be aimed at by the worker in flint, developed gradually, and that there *is* a real connection of the various forms which were manufactured. It is legitimate to assume as a hypothesis that the most generalised form—the rostro-carinate with a ventral "planing" surface—cutting latero-ventral edge, sharp-cutting carina or keel and pointed rostrum for grubbing and boring—in fact the form shown in fig. 1, is, if not the initial conception, yet at any rate that to which all others are connected.

* The whitening of flint by solution of the opal which cements its microcrystalline siliceous particles needs some other name than "decomposition." I propose to call it "lactescence" and to describe the flint thus changed as "lacteate" or "milky."

From it (fig. 1) we can imagine the flint-worker developing—as group 1—the more flattened “batiform” implement (of rare occurrence), still showing a median dorsal carina, and in contrast to this—as group 2—the platessiform (Chellean or Acheulian) implements with the carina forming one lateral margin and the ventral area *either* flaked down to form the opposite margin *or* translated into a lateral position. From the most generalised rostro-carinate (fig. 1) by curvature of the rostrum, often followed by dislocation or complete “atrophy” of the ventral and of the dorsal plane (as in the transitionals to the platessi-form type), we get group 3, the “uncinate” simplified type, figured in this paper. And lastly, as the exact complement of this we get group 4—a form showing the complete atrophy of rostrum and carina, with full and emphatic development of the parts atrophied in group 3. The type of group 4 is the heavy and useful “jack-plane” figured in the present paper.

Probably at any time the flint worker habitually made such flaked pieces and chipped forms as the piece of flint which he picked up and his own consciousness of skill suggested to him. At the same time there is evidence of such relationship in his mind and intention, in regard to the forms manufactured by him, as I have here sketched. There were probably “schools” and traditions in this art succeeding one another, and influenced by what had been established practice.

The passage from simple flakes to the side-scrapers and spear-head-like Moustierian implements is readily understood, whilst there are easy steps leading from Chellean heavy-butted hand-axes to the rougher Neolithic pièces and so to the fine chisel-like or adze-like “celts,” both rough and polished, of Neolithic and modern stone-weaponed man.

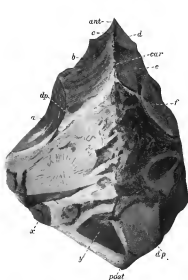


FIG. 2.

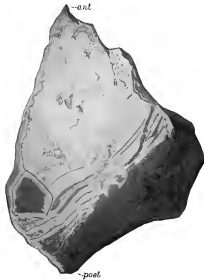


FIG. 3.

FIGS. 2 and 3.—Dorsal and ventral aspect of the Sturge-Icklingham rostro-carinate (drawn of the actual size). *Ant.*, anterior point; *post.* posterior region; *car.*, carina; *d.p.*, the dorsal plane; *y*, site whence a "trimming" has been removed; *x*, a similar site; *a*, *b*, *c*, the concavities left by the removal of the three chief "flakings" of the left lateral region of the rostrum; *d*, *e*, *f*, the concavities left by the three chief "flakings" of the right side. Note the unworn condition of the carina and the unsymmetrical shaping of the mass or butt of the flint behind the rostrum.

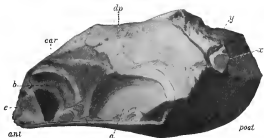


FIG. 4.

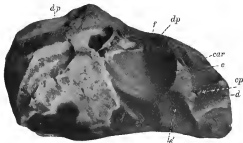


FIG. 5.

FIGS. 4 and 5.—Left lateral aspect and right lateral aspect of the Sturge-Icklingham rostro-carinate. The close similarity of the outline to that of the similar lateral view (whether right or left) of the "Norwich test specimen" should be verified by comparing these two figures with the figures of the Norwich specimen on the opposite page. The lettering here is the same as in figs. 3 and 4, except *cp* in fig. 5, which points to the "centre of percussion" of the blow by which the flaked surface *c* *c'* was formed. The formation of the concave flaked surface *f*, fig. 5, by a blow downward from the dorsal plane, is well shown by its rippling.

FIG. 4 is from a wash-drawing; fig. 5 is a reproduction of a photograph of the actual specimen.

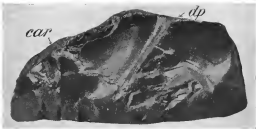


FIG. 4 bis.

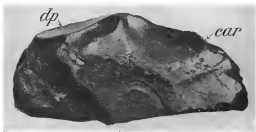


FIG. 5 bis.

FIGS. 4 bis and 5 bis.—Right and left internal aspect of the Norwich test specimen (published by me in the 'Occasional Papers,' No. 4 (1914), "Boy. Anthropol. Institute"), to compare with the similar views of the Sturge-Icklingham specimen.

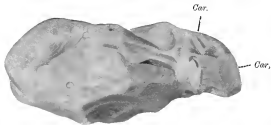


FIG. 5a.

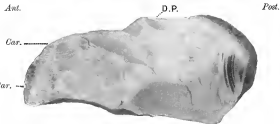
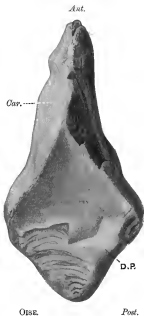


FIG. 5b.



FIG. 5c.

FIGS. 5a, 5b, and 5c.—Drawings of the "Muir-Whitson yellow mid-glacial" rostro-carinate, now in the Ipswich Museum. It was figured by Mr. Reid Muir in 'Journ. Roy. Anthropol. Institute,' vol. 46, p. 204. FIG. 5a.—View of right lateral region. FIG. 5b.—View of left lateral region. FIG. 5c.—View of the ventral plane. Letters: *Ant.*, anterior; *Post.*, posterior; *Car.*, carina; *D.P.*, dorsal plane or platform. Drawn of the actual size.



OISE.

FIG. 6.



BURNHAM.

FIG. 7.

The "Capitan-Oise" and "Rowell-Burnham" uncinates.

FIG. 6.—Dorsal aspect of the Capitan-Oise specimen.

FIG. 7.—Similar view of the Rowell-Burnham specimen.

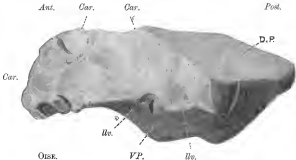


FIG. 8.

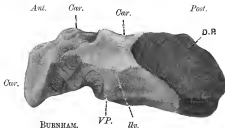


FIG. 9.

The "Capitan-Oise" and "Rowell-Burnham" Uncinates.

FIG. 8.—Left lateral aspect of the Capitan-Oise specimen.

FIG. 9.—Similar view of the Rowell-Burnham specimen. Lettering: *Ant.*, anterior; *Post.*, posterior; *D.P.*, dorsal plane or platform; *Car.*, carina; *Ila.*, low latero-ventral arch or ridge separating the left lateral surface from the reduced and up-turned ventral plane; *VP.*, the obliquely up-thrown ventral plane (see fig. 12).

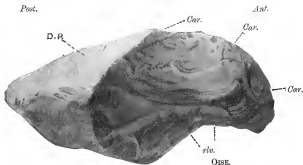


FIG. 10.

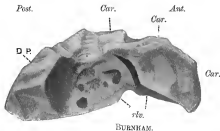


FIG. 11.

The "Capitan-Oise" and "Rowell-Burnham" *Uncinates*.

FIG. 10.—Right lateral aspect of the Capitan-Oise specimen.

FIG. 11.—Similar view of the Rowell-Burnham specimen. Lettering as in Figs. 6-9, excepting *rlo.*, the more latero-ventral *areole* or ridge separating the right lateral surface from the reduced and up-turned ventral plane (see fig. 8).

Ant.



Osse.

Post.

FIG. 12.—Anti-dorsal aspect of the Capitan-Oste specimen, showing the median position taken by the right latero-ventral arcite or ridge, *rld.*, and the upthrow of the ventral plane, *VP.*, to the left lateral face in the rostral region, whilst the broad "butt" or "stern" is treated merely as a massive base to the large dorsal plane.



FIG. 13.

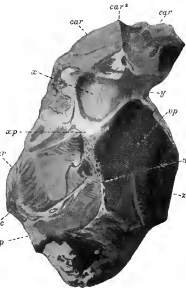


FIG. 14.

FIGS. 13 AND 14.—Left (fig. 13) and right (fig. 14) face of "the Peake-Sonning uncinata," drawn of the actual size. Letterings *x* and *y* point to a large area of unflaked cortex, the natural shape of which as a sort of trough has been used by the tool-maker to emphasise the overhanging rostrum (see *x*, *y* in fig. 14); *ap*, flaked edge of cortex; *car*, carina; *car**, identical point in figs. 13 and 14; *dp*, possible remnant of a dorsal plane; *vp*, probable representative of the ventral plane, now merged in the right lateral area; *n*, probable right latero-ventral angle; *car*, carina; *h*, large flake-area on left side of rostrum; *ac* and *ac**, identical points shown in the two drawings; *h*, a natural hollow in the flint, due to enclosure of organic remains (probably a sponge).



Post.

FIG. 13.—Ventral aspect of the "Marblehead Jack-plane." Drawn of the actual size. *Ant.*, anterior margin (apparently that which was used as a cutting edge when the implement was pushed forward in the manner of a carpenter's plane); *Post.*, posterior margin. The formation of this ventral plane by one large fracture, from the edges of which a few relatively small "trimming" flakes have been removed, is evident.

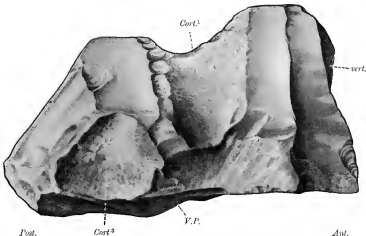


FIG. 16.—Right lateral face of the Martlesham Jack-plane.

Lettering in both figs. 16 and 17: *Ant.*, anterior; *Post.*, posterior; *Ant. H.*, anterior hump; *Post. H.*, posterior hump; *V.P.*, ventral plane (shown by slight tilting of the specimen); *cort.¹* and *cort.²*, unfaked cortex in the valley separating the two humps; *cort.¹*, unfaked cortex on the right lateral area; *vert.*, vertical anterior face formed by a vertical fracture. The numerous large flakings by which the implement was sculptured and the ripple-marks showing their centres of percussion and direction are obvious.

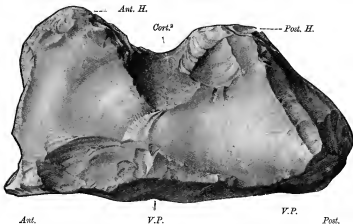


FIG. 17.—Left lateral face of the Martlesham Jack-plane. Letters as in fig. 16.

The cutting of the reference lines to *V.P.*, *Ant. H.*, and *Post. H.*, has unfortunately broken the outline of the drawing in figs. 16 and 17, as also have the reference lines to *cor.* in figs. 10 and 11.